Microvascular Research

An International Journal

FOUNDING EDITORS
George P. Fulton David Shepro Benjamin Zweifach

EDITOR-IN-CHIEF
David Shepro

Volume 30

1985

ACADEMIC PRESS, INC.
(Harcourt Brace Jovanovich, Publishers)

San Diego Orlando New York Austin London
Montreal Sydney Tokyo Toronto

Copyright © 1985 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1985 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0026-2862/85 $3.00

MADE IN THE UNITED STATES OF AMERICA

CONTENTS OF VOLUME 30

Number 1, July 1985

I. A. Sokolova, E. B. Manukhina, S. M. Blinkov, V. B. Koshelev, V. G. Pinelis, and I. M. Rodionov. Rarefication of the Arterioles and Capillary Network in the Brain of Rats with Different Forms of Hypertension 1

K. P. Ivanov, M. K. Kalinina, and Yu. I. Levkovich. Microcirculation Velocity Changes under Hypoxia in Brain, Muscles, Liver, and Their Physiological Significance 10

T. O. Neild and K. Keef. Measurements of the Membrane Potential of Arterial Smooth Muscle in Anesthetized Animals and Its Relationship to Changes in Artery Diameter 19

Erik T. Engelson, Thomas C. Skalak, and Geert W. Schmid-Schönbein. The Microvasculature in Skeletal Muscle. I. Arteriolar Network in Rat Spinotrapezius Muscle 29

J. J. Friedman and C. T. Hing. The Effect of Long-Term Intraarterial Norepinephrine Infusion on Transcapillary Fluid and Protein Transport 45

Daniel H. Hechtman and Anthony Jageneau. Inhibition of Cold-Induced Vasoconstriction with Ketanserin 56

Bernd Zimmerhackl, John Tinsman, Rex L. Jamison, and Channing R. Robertson. Use of Digital Cross-Correlation for On-Line Determination of Single-Vessel Blood Flow in the Mammalian Kidney 63

John E. Bassett, Curt A. Wiederhielm, and Robert D. Hogan. Interspecific Comparison of Subcutaneous Tissue Fluid Pressure in the Bat Wing 75

Daniel Richardson, Richard Schwartz, and Gordon Hyde. Effects of Ischemia on Capillary Density and Flow Velocity in Nailfolds of Human Toes 80

S. A. Gilchrist and J. C. Parker. Exclusion of Charged Macromolecules in the Pulmonary Interstitium 88

B. L. Coomber and P. A. Stewart. Morphometric Analysis of CNS Microvascular Endothelium 99

B. J. Moxham, R. C. Shore, and B. K. B. Berkovitz. Fenestrated Capillaries in the Connective Tissues of the Periodontal Ligament 116

J. Ninet and A. Fronek. Cutaneous Postocclusive Reactive Hyperemia Monitored by Laser Doppler Flux Metering and Skin Temperature .. 125

Number 2, September 1985

A. Colantuoni, S. Bertuglia, and M. Intaglietta. Microvessel Diameter Changes during Hemorrhagic Shock in Unanesthetized Hamsters ... 133

Ke-Seng Zhao, David Junker, F. A. Delano, and B. W. Zweifach. Microvascular Adjustments during Irreversible Hemorrhagic Shock in Rat Skeletal Muscle 143

JERRY C. COLLINS AND THOMAS R. HARRIS. Lung Vascular Transport at Controlled Pressures with Reduced Coronary Flow in Sheep 154

PÅL ROOTH, KJELL GRANKVIST, AND INGE-BERT TÄLJEDAL. *In Vivo* Fluorescence Microscopy of Blood Flow in Mouse Pancreatic Islets: Adrenergic Effects in Lean and Obese-Hyperglycemic Mice 176

RONALD P. CRISMAN, BARRY RITTMAN, AND ROBERT J. TOMANEK. Exercise-Induced Myocardial Capillary Growth in the Spontaneously Hypertensive Rat 185

MARGARET M. VAYO, HERBERT H. LIPOWSKY, NOLAN KARP, EMILY SCHMALZER, AND SHU CHEIN. A Model of Microvascular Oxygen Transport in Sickle Cell Disease 195

MURRAY A. KATZ. Comparison of Crosspoint and Least-Squares Regression Methods in Computation of Membrane Protein Flux Parameters from Lymph Flux Analysis 207

J. S. LEE, L. P. LEE, M. V. EVANS, AND L. GAMAS. A Density Method to Quantify Pulmonary Microvascular Hematocrit 222

BRIEF COMMUNICATIONS

LYNN J. GROOME AND GARY T. KINASEWITZ. A Simple Method for Determining the Homoporous Solute-Membrane Permeability from Plasma-to-Lymph Measurements 235

MURRAY A. KATZ. Limits of Membrane Structural Change Which Produce Enhanced Permeability and Reduced Hydraulic Conductivity ... 242

LETTERS TO THE EDITOR 246

Number 3, November 1985

EUGENE M. RENKIN. B. W. Zweifach Award Lecture. Regulation of the Microcirculation 251

HERMANN METZGER AND SABINE HEUBER-METZGER. Effect of Hypovolemic Hypotension on the Cerebral Oxygen Supply of Rats with Slightly Raised or Lowered Body Temperatures 264

PAUL KILZER, KATHY CHANG, JOYCE MARVEL, CHARLES KILO, AND JOSEPH R. WILLIAMSON. Tissue Differences in Vascular Permeability Changes Induced by Histamine 270

KENNETH P. SUNNERGREN AND MICHAEL J. ROVETTO. The Effects of Hyaluronidase on Interstitial Hydration, Plasma Protein Exclusion, and Microvascular Permeability in the Isolated Perfused Rat Heart 286

SUSAN R. KAYAR AND NATALIO BANCHERO. Sequential Perfusion of Skeletal Muscle Capillaries 298

THOMAS A. BRONIKOWSKI, CHRISTOPHER A. DAWSON, AND JOHN H. LINEHAN. Limits on the Continuous Distribution of Pulmonary Vascular Resistance versus Compliance from Outflow Occlusion 306

NICOLAE SIMIONESCU AND MAYA SIMIONESCU. Interactions of Endogenous Lipoproteins with Capillary Endothelium in Spontaneously Hyperlipoproteinemic Rats 314

Masahiro Shibata and Akira Kamiya. Microcirculatory Responses to Carotid Sinus Nerve Stimulation at Various Ambient O_2 Tension in the Rabbit Tenuissimus Muscle 333

Brief Communications

Julian H. Lombard and William J. Stekiel. Effect of Oxygen on Arteriolar Diameters in the Rat Mesoappendix 346

Haruhisa Hashimoto, Russell L. Prewitt, Clark W. Efaw, and Issac I. H. Chen. Calculated Cross-Sectional Wall Area of Arterioles Is a Useful Indicator of Hypertrophy in Conscious Rabbits 350

Technical Report

Carla A. Sueta, Jerry W. Dusseau, and Phillip M. Hutchins. A Microcirculatory Technique for Evaluating Intravascular and Topical Administration of Vasoactive Agents: Response to AVP in the SHR 354

Announcements 365

Author Index for Volume 30 366

Cumulative Subject Index for Volumes 29–30 368

Digitized by the Internet Archive
in 2023 with funding from
Kahle/Austin Foundation

https://archive.org/details/microvascular-research_1985_30_contents

Information for Contributors

Microvascular Research (MVR) is an international journal dedicated to the dissemination of fundamental information related to the microvascular field.

Submission of Manuscripts. One original and two complete carbon copies should be sent via first-class mail, in flat form, to **Microvascular Research Editorial Office, Dr. David Shepro, 2 Cummington St., Boston University, Boston, Massachusetts 02215.** MVR will not be responsible for manuscripts lost in the mails.

Original papers only will be considered. Manuscripts are accepted for review with the understanding that the same work has not been and will not be nor is presently submitted elsewhere, and that its submission for publication has been approved by all of the authors and by the institution where the work was carried out; further, that any person cited as a source of personal communications has approved such citation. Written authorization may be required at the Editor's discretion. Articles and any other material published in *Microvascular Research* represent the opinions of the author(s) and should not be construed to reflect the opinions of the Editor(s) and the Publisher.

Authors submitting a manuscript do so on the understanding that if it is accepted for publication, copyright in the article, including the right to reproduce the article in all forms and media, shall be assigned exclusively to the Publisher. The Publisher will not refuse any reasonable request by the author for permission to reproduce any of his or her contributions to the journal.

Manuscript Style. Papers should be typewritten, double-spaced on one side of the paper, with wide margins. The manuscript should be divided into the following sections: Abstract, Introduction, Materials and Methods, Results, Discussion, References, and Acknowledgments. The abstract, which will precede each article, should be 225 words or less and should be typed on a separate sheet. In addition the manuscript should include, on separate pages, (1) the complete title with names of authors and affiliations (including ZIP CODE), (2) running title, consisting of no more than 40 characters including spaces, (3) key words that are suitable as **Index Descriptors,** and (4) the address to which proofs are to be mailed.

Tables. Tables are to be typed on separate sheets and numbered with Arabic numerals. Each table should contain an explanatory title that would make reference to the text unnecessary.

Figures. These should be numbered with Arabic numerals and should be mentioned consecutively in the text. Legends are to be typed together on a separate sheet.

Illustrations, drawn with a lettering set, should be in finished form ready for the printer. Lettering on the original drawing should be large enough (minimum, 4 mm) to be legible after reduction to one-third. Graphs should be plotted with black India ink on light blue coordinate paper, no larger than 8.5 × 11 inches, with coordinates properly labeled; grid lines that are to show in the photoreproduction should be inked in black.

Photographs should be submitted as glossy prints and not marred by staples, paper clips, or pencil marks. For best reproduction of halftones, provide clear, sharp photographs with adequate contrast. The best results will be obtained if authors match the contrast and density of all figures appearing on a single plate. If this is not possible, please provide unmounted original art. Providing an overlay that indicates the most critical areas of micrographs will also aid in ensuring high-quality reproduction. The dimensions of the printed page are 5 × 8 in. (127 × 203 mm). It is recommended that micrographs be submitted as near as possible to this size so that large reductions will not be necessary.

Illustrations in color can be accepted only if the authors defray the cost.

Footnotes. These should be designated in the *text* by superscript *numbers* and typed on a separate sheet; in the tables by superscript *letters* and typed at the bottom of the table.

Abbreviations. In general these should follow the usage employed by Chemical Abstracts. The *Handbook for Authors,* 1978, of the American Chemical Society is also an acceptable guide.

References. Citations in the text consist of the author's name, and the year of publication in parentheses. The references should be listed alphabetically and should conform to the following style:

GRAYSON, J., AND LEVESON, M. (1985). Functional and morphological changes in the microcirculation of the dog following acute coronary artery ligation. *Microvasc. Res.* **29,** 161–175.

ALLEN, J. C., AND BUKOSKI, R. D. (1982). Current status of vascular smooth muscle subcellular calcium regulation. *In* "Vascular Smooth Muscle: Metabolic, Ionic, and Contractile Mechanisms" (M. F. Crass III and C. D. Barnes, eds.), pp. 99–134. Academic Press, New York.

Abbreviations of journal names should follow the style of *Chemical Abstracts Service Source Index,* 1980. Unpublished observations and personal communications should be cited in the *text* as such.

Proofs. Proofs will be sent to the author with a reprint order form. Authors will be charged for alterations in excess of 10% of the cost of composition.

Reprints. Fifty reprints of each article (without covers) will be supplied free of charge. Additional reprints may be ordered. A reprint form will accompany the proofs.

Brief Communications. Preliminary reports will be reviewed for prompt publication; however, the comments must be restricted to no more than five typewritten pages, including references, tables, and illustrations. No abstract should be included.

To facilitate the publication of manuscripts, especially those papers based upon a new, theoretical concept, the Editors invite each contributor to submit the names of at least three scientists who could review the submitted manuscript.